OVERFLOW CONTROL PROGRAM

MEMORANDUM

DATE: June 22, 2016

TO: Terry Leeds, Andy Shively

FROM: Dave Silverstein

RE: Mission Hills SSO Investigation and Proposed Plan

BACKGROUND

In February 2016, the OCP Team was informed of two possible constructed SSO's in Mission Hills, Kansas. After investigation with WSD staff, the OCP Team has confirmed the presence of three constructed SSOs on the Mission Hills interceptor sewer in Kansas. They are located at MHs KS07-121, KS07-150, and KS 27-172 and are identified on the attached figure. OCP Team has identified a fourth constructed overflow in KCMO near Stateline Road and 67th Terrace at MH 125-023. All 4 SSOs discharge to a lined channel which drains to Brush Creek in Mission Hills.

WSD has also identified two manholes (KS07-022 and KS07-144Sa) that overflow during wet weather to Brush Creek behind a residence located at 5600 Mission Drive.

The Mission Hills interceptor sewer and its associated collection system were not modeled or investigated by the Overflow Control Program when the LTCP was developed because system records and GIS data showed the system as a separated sewer system with no known constructed SSOs.

SSES INVESTIGATIONS AND FLOW MONITORING

WSD has authorized the OCP Team to perform the following supplemental work to obtain information necessary to determine when the constructed SSOs activate and how much I/I flow is entering the system from KCMO and Mission Hills.

1. Perform system characterization and MH inspections of approx. 44 MHs along the interceptor in KS and into KCMO.
2. Install 6 flow meters in the system to collect sufficient data for model calibration. Two of the flow meters are collecting data from two of the 4 known SSO overflow pipes. The flow meters will be removed by the end of June as dry conditions prevail in the summer.
3. Extend the current Brush Creek InfoWorks model to include the interceptor, perform model calibration using the flow meter data, and then determine if the constructed SSOs are required to maintain system capacity. If it is determined that they are required, the model can then be used to determine the level of I/I reduction from the KCMO and Mission Hills collection system is required to allow the constructed SSOs to be removed and to prevent overflows from manholes.

The OCP Team has also recommended and will be submitting an Optional Services request for approval (WSD has given verbal approval to proceed) to perform inspections of 22 MHs and smoke testing of approx. 9550' of sewer mains (shown in red on the attached figure) and 12,150' of the Mission Hills interceptor sewer (shown in blue on the attached figure). The 22 MHs and 9550' of sewer mains are KCMO assets that were not inspected or smoke tested under the Brush Creek NSR project because the pipes are larger than 12" or are located in Kansas.

The OCP Team is also working with WSD to obtain CCTV inspection data for the interceptor and the 9550' of sewer mains. WSD crews have recently completed CCTV inspection of 5700' of the interceptor downstream from MH KS07-022 to Stateline Road. The remainder of the interceptor (6400') will be inspected by ACE under the current EV-13/14 contract.

OCP Team Action Plan

The OCP has begun extension of the Brush Creek InfoWorks model to include the interceptor and will perform calibration using the flow meter data when final data is available in mid-July. The model will then be used to determine the level of I/I reduction from the KCMO and Mission Hills sewers required to allow the constructed SSOs to be removed.

The OCP Team has also held discussions with GBA regarding performance of an I/I reduction investigation of the KCMO sewers. GBA is currently the design professional for the Brush Creek Area 2 Neighborhood Sewer Rehabilitation Project and their project area includes that portion of KCMO collection system that contributes flow to the Mission Hills interceptor sewer. GBA will change their focus from small sewer rehab to I/I reduction in this area. Their scope of work will be expanded to include review of CCTV, MH inspection, and smoke testing data for pipes larger than 12" in KCMO, for KCMO sewer lines in KS, and the Mission Hills interceptor sewer (approx. 22,000 lf); and the development of rehabilitation recommendations necessary to remove I/I. The use optional services or a contract amendment will be required to incorporate these additional sewers into their contract. GBA is reviewing information and has been asked to submit a scope and fee proposal for this additional work.

Having GBA perform this work will be cost effective because they are already under contract to evaluate the KCMO sewers and they previously performed SSES work in Mission Hills on the KCMO sewers and Mission Hills sewers on behalf of Johnson County Wastewater. GBA can review the findings of their previous investigations, coupled with the additional SSES services describe above, to develop comprehensive recommendations for I/I removal.

Construction costs for I/I removal and elimination of the constructed SSOs will be determined following completion of GBA's work and the OCP Team's modeling efforts. A portion of the costs associated with I/I removal will have already been included in the overall budget for the Brush Creek Area 2 Neighborhood Sewer Rehabilitation Project, but since the focus was on 12" and smaller sewers above the first inlet, it is likely that additional funds will be required to fully address I/I removal on KCMO sewers and on the interceptor.

GBA has reported that their analysis of smoke testing data performed for the Brush Creek neighborhood sewer rehab project identified a considerable number of private inflow sources. The OCP Team will be estimating the costs to perform building plumbing evaluations and I/I source disconnections in KCMO consistent with the work being performed in other separate sanitary sewer areas. WSD can then decide

whether or not to move ahead with this work in conjunction with I/I reduction in the public system in an effort to eliminate the constructed SSOs and manhole overflows.

It is anticipated that elimination of the constructed overflows from the interceptor cannot be achieved without reduction of I/I in the Mission Hills sewers. GBA reported that extensive private and public rehab work was previously performed in Mission Hills in the early 2000's when the collection system was turned over to JCW. However, they noted that lateral connections and lateral rehab repairs were not performed and CCTV showed considerable inflow from laterals after sewer main rehabilitation work was completed.

Mission Hills SSES

KS07-022

KS07-144Sa

Constructed SSO Locations

Legend

- Flow Meters
- Manholes Inspected
- KCMO Sewermain
- Mission Hills Interceptor
- Other Sewermain - KCMO & Mission Hills
- BC 2 - Drains to Mission Hills